

REMARKS

Favorable reconsideration of this Application as presently amended and in light of the following discussion is respectfully requested.

After entry of the foregoing Amendment, Claims 1-5, 7-15, and 17-20 are pending in the present Application. Claims 1 and 11 have been amended to address cosmetic matters of form. No new matter has been added.

By way of summary, the Official Action presents the following issues: Claims 1, 2, 4-9, 11, 12 and 14-19 are rejected under 35 U.S.C. § 103 as being unpatentable over Morishima (European Patent No. 0795845) in view of Katoh et al. (U.S. Patent NO. 4,719,833, hereinafter "Katoh"); Claims 3 and 13 are rejected under 35 U.S.C. § 103 as being unpatentable over Morishima in view of Katoh and further in view of Malah ("Cepstral Residual Vocoder for Improved Quality Speech Transmission at 4.8 kbps," 1982); and Claims 10 and 20 are rejected under 35 U.S.C. § 103 as being unpatentable over Morishima in view of Katoh and further in view of Dunlap et al. (U.S. Patent NO. 5,748,534, hereinafter "Dunlap").

Applicant thanks the Examiner for the courtesy of the interview extended to the Applicant's representative on March 8, 2007. During the interview, the rejections noted in the outstanding Official Action were discussed. However, no agreement was reached pending the Examiner's further review and a response as filed. Comments presented during the interview are reiterated below.

REJECTION UNDER 35 U.S.C. § 103

The outstanding Official Action has rejected Claims 1, 2, 4-9, 11, 12, and 14-19 under 35 U.S.C. § 103 as being unpatentable over Morishima in view of Katoh. The Official

Action states that Morishima discloses all of the Applicant's claim features, with the exception of generating musical notes by digitally sampling a frequency distribution with a predetermined number and calculation for altering the pitch waveform samples, wherein the pitch is altered according to a number of read out samples. However, the Official Action cites Katoh as disclosing this more detailed aspect of the Applicant's claimed advancements, and states that it would have been obvious to one skilled in the art at the time the advancements were made to combine the cited references for arriving at the Applicant's claims. Applicant respectfully traverses the rejection.

Applicant's amended Claim 1 recites, *inter alia*, a sound generating device for a mobile terminal, including:

... calculating means responsive to the selecting means for calculating, on the basis of a preset calculation rule, a single sound table from the samples of the stored waveform corresponding to the selection, the sound table including calculating additional samples in between respective adjacent samples of said waveform a number of additional samples being the same for each note of an octave, but decreasing with ascending octaves;

reading means for reading out a number of the samples, but not all of the samples from said calculated sound table, wherein the number of said samples read out varies in accordance with said selected pitch . . .

Morishima describes a radio paging receiver, including a scale map ROM (7) for memorizing a plurality of musical tone information, a CPU (5) for controlling operation of the paging device, and appropriate amplification and decoding circuitry.¹ More specifically, Morishima includes a scale map ROM (7) and a melody registration RAM (8). In operation, the scale map ROM (7) stores, in the form of a map, information of a plurality of musical tones forming a scale. Specifically, the scale map ROM (7) stores tone name information of each musical tone and a tone frequency corresponding to the tone name. The tone information data may also include sound generation times of the musical notes for each tone

¹ Morishima at column 4, line 19 through column 5, line 15.

name.² In this way, upon receiving an appropriate radio signal at the pager device identifying a tone name and a scale map, the tone may be generated based upon the tone information data by the musical tone signal producing circuit (9).

Further, Morishima describes that the melody registration ROM (8) memorizes melody data produced by the musical tone signal producing circuit (9) such that the stored melody data can be used in a subsequent communication to the pager. Moreover, in a melody registration mode, a melody may be introduced to the melody registration ROM (8) in cooperation with an infrared remote controller.³

Katoh describes a tone signal generation device using interpolation of sample points of a waveform. As shown in Table 1, a reference octave includes a number of sample points P which varies for each note within the octave.⁴

Conversely, in an exemplary embodiment of the Applicant's claimed advancement, as recited in amended Claim 1, a sound generating device is provided. The sound generation device includes a memory for storing sounds in the form of waveforms so that each waveform corresponds to a sound. Each sound has a typical frequency distribution. Digitally sampling the frequency distribution with a predetermined number of samples provides a waveform. The sound generating device includes a selecting interface for selecting a sound and a pitch for the selected sound. The sound generating device calculates, responsive to the selection, on a basis of a preset calculation, a single sound table from the samples of the stored waveform. The single sound table corresponds to the selection and includes additional samples in between respective adjacent samples of the waveform. The number of additional samples is the same for each note of an octave, but decreases with ascending octaves. The

² See Morishima at column 4, lines 28-39.

³ See Morishima at column 12, lines 37-49.

⁴ See Katoh at column 9.

sound generating device reads out a number of samples, but not all of the samples from the calculated sound table. The number of samples read out varies in accordance with the selected pitch. An output of the sound generating device outputs a sound on the basis of the number of samples read out from the sound table.

As can be appreciated, Morishima does not describe calculating a sound table in response to a selection of a sound, the sound table including additional samples in between respective adjacent samples of the waveform wherein the number of additional samples is the same for each note of an octave, but decreasing with ascending octave. Likewise, although Katoh describes interpolation of sample points, there is no disclosure or suggestion in Katoh for creating a sound table in response to a selection of a sound such that the sound is extracted from memory for creating the sound table, the sound table including additional samples in between respective adjacent samples of the waveform, the number of additional samples being the same for each note of an octave but decreasing with ascending octaves as recited in the Applicant's amended claims.

Accordingly, Applicant respectfully requests that the rejection of Claims 1, 2, 4-9, 11, 12, and 14-19 under 35 U.S.C. § 103 be withdrawn.

The outstanding Official Action has rejected Claims 3 and 13 under 35 U.S.C. §103 as being unpatentable over Morishima in view of Lindgren, in further view of Malah. The Official Action states that Morishima and Katoh describe all of the Applicant's claim features with the exception of generating musical notes by digitally sampling a frequency distribution, altering the pitch of a sound waveform, or utilizing 51 samples for a note waveform. The Official Action cites Malah as describing these more detailed aspects of the Applicant's advancements, and states that it would have been obvious to one skilled in the art at the time

the invention was made to combine the cited references for arriving at the Applicant's claims. Applicant respectfully traverses the rejection.

As noted above, neither Morishima nor Katoh disclose, or suggest, all of the elements of the Applicant's amended claims for which they have been asserted. As Malah does not remedy the deficiency discussed above, Applicant respectfully submits that a *prima facie* case of obviousness has not been presented.

Accordingly, Applicant respectfully requests that the rejection of Claims 3 and 13 under 35 U.S.C. §103 be withdrawn.

The outstanding Official Action has rejected Claims 10 and 20 under 35 U.S.C. §103 as being unpatentable over Morishima and Katoh, in view of Dunlap. The Official Action states that Morishima and Katoh describe all of the Applicant's claim features with the exception of generating musical notes by digitally sampling a frequency distribution, altering the pitch of a sound waveform, or utilizing 8 kHz as a sampling rate. The Official Action cites Dunlap as describing these more detailed aspects of the Applicant's advancements, and states that it would have been obvious to one skilled in the art at the time the invention was made to combine the cited references for arriving at the Applicant's claims. Applicant respectfully traverses the rejection.

As noted above, neither Morishima nor Katoh disclose, or suggest, all of the elements of the Applicant's amended claims for which they have been asserted. As Dunlap does not remedy the deficiency discussed above, Applicant respectfully submits that a *prima facie* case of obviousness has not been presented.

Accordingly, Applicant respectfully requests that the rejection of Claims 10 and 20 under 35 U.S.C. §103 be withdrawn.

CONCLUSION

Consequently, in view of the foregoing amendment and remarks, it is respectfully submitted that the present Application, including Claims 1-5, 7-15, and 17-20, is patently distinguished over the prior art, in condition for allowance, and such action is respectfully requested at an early date.

Respectfully submitted,

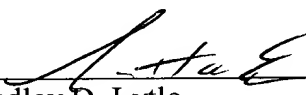
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